

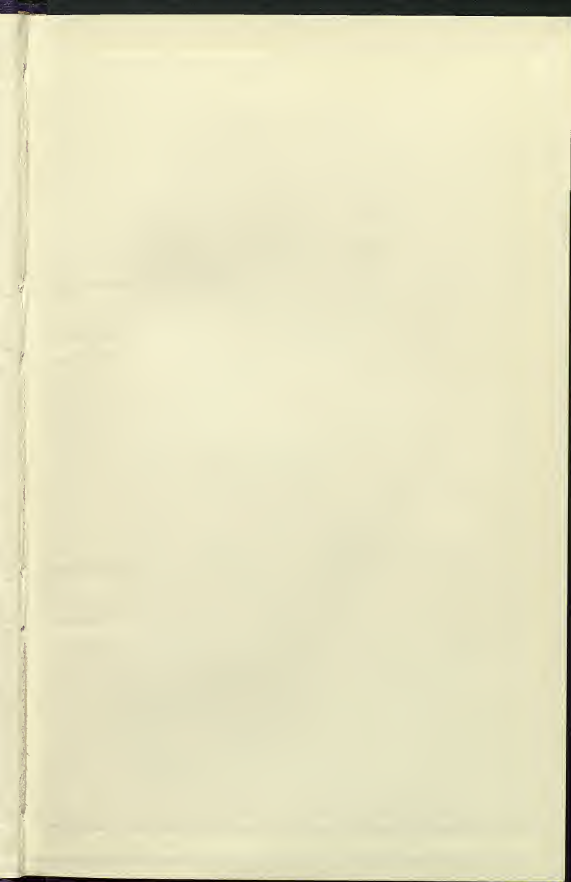


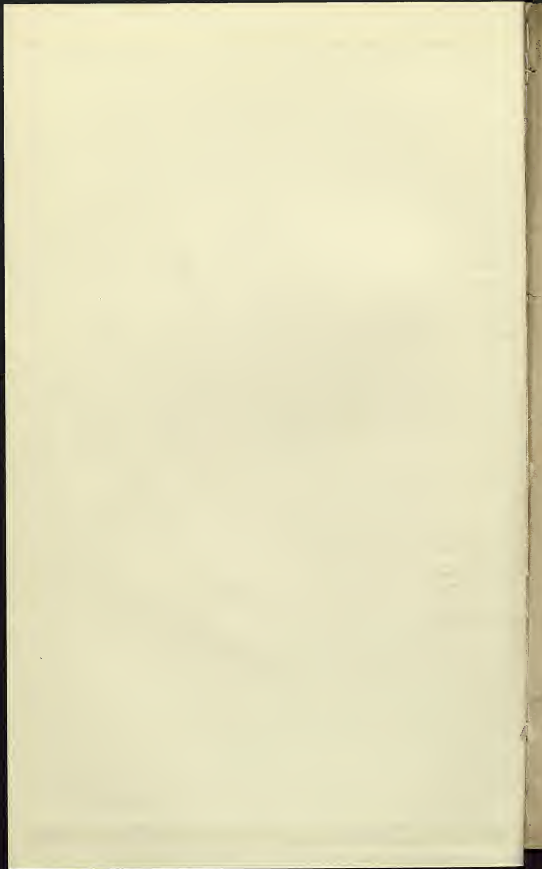
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SUGGESTIONS
ON
FATTENING CATTLE
WITH
NATIVE
INSTEAD OF
FOREIGN PRODUCE.

BY JOHN WARNES, JUN. ESQ.

PRICE ONE SHILLING AND SIXPENCE.

PROFITS OF THIS PUBLICATION WILL BE APPROPRIATED TO THE
ENCOURAGEMENT OF THE GROWTH OF FLAX IN NORFOLK.

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SUGGESTIONS ON FATTENING CATTLE

WITH

NATIVE INSTEAD OF FOREIGN PRODUCE.

THE AGRICULTURE of the NETHERLANDS is said greatly to excel that of England, or of any part of the world. Copious details of those peculiar modes which rendered the husbandry of that country so eminently superior to ours, are published in "The Royal Agricultural Society's Journal," in "The Farmers' Magazine for June, 1840," and "Farmers' Series of the Library of Useful Knowledge," under the head "Outlines of Flemish Husbandry." These works were written during a tour made by the authors through East and West Flanders; and as reference is given to particular farms, their accuracy cannot be doubted. I venture strongly to recommend an attentive perusal of those excellent accounts, being persuaded that they will tend materially to advance the objects of the following pages. It is far from my intention to draw any invidious comparison between the farmers of the Netherlands and those of my own country. On the contrary, from all I can discover, the Flemish farmer is much beneath the British agriculturist in the possession of capital, station, education, and general knowledge. Our advantages consist in machinery, in the breed of our horses, in cattle and sheep. "But," says the author of the Outlines of Flemish Husbandry, "in the minute attention to the qualities of the soil, in the management of manures of different kinds, in the judicious succession of crops, and especially in the economy of land, we have still to learn something of the Flemings." The climate is described as differing very little from that of England; but the winters are more severe, and snow covers the ground longer; consequently tillage and sowing

cannot be performed till a late period of the spring. The greater portion of the soil is far from being naturally productive; much of it is of a poor sandy description. It is compared to the sandy soil of Norfolk and Lincolnshire; but by indefatigable industry is rendered extremely fertile.* Of all their crops, flax is the most profitable. It fetches from £20 to £25, and even to £30 per acre in the best cultivated districts, independent of the seed, which is worth £5 or £6 more. In other parts it is of much less value, being rated at £12 per acre only. French and Brabant merchants deal extensively with the Flemings for flax. They purchase it as soon as the seed is thrashed, and prepare it for exportation at their own expense; so that the profit of an acre of flax to Flemish farmers must be considerable, and may well be termed their "golden crop." Now as the soil of this kingdom is equal if not superior to that of the Netherlands, and as such immense importations† are annually made of flax, and even of the refuse of the seed in the shape of oil cake, surely the cultivation of this important crop would be of incalculable advantage to the British farmer. Flax is one of the most extraordinary and valuable productions of the earth. The finest and most elegant lace is made of the fibre, while the coarser parts are manufactured into twine, rope, sacks, &c. &c. Oil is expressed from the seed, and used by painters, cabinet makers, and others, for various purposes. The oil was once highly appreciated in this country as linseed cake for fattening cattle; but, in consequence of the demand becoming greater than the supply, a spurious description of cake was palmed upon the agriculturists, who now perceiving the imposition, hold it in less estimation. Flax is grown in some parts of England and Scotland, but more extensively in Ireland. A society for the improvement of the growth and preparation of flax has recently been formed at Belfast, in the latter kingdom, which promises to be of great benefit. The origin of this society is somewhat remarkable. The Belgian Government having it in contemplation to impose an increased duty upon the export of flax, sent a deputation consisting of a Member of the Belgian Senate, two Members of the Chamber of Representatives, a Banker, and an intelligent Merchant, to inspect the establishments of the leading manufactories in England, Scotland, and Ireland. They were surprised at the specimens of flax submitted to their inspection, which

* See Appendix.

† Mr. Skinner says six millions.—See his speech in the Appendix.

they considered our inferior mode of culture incapable of producing. Hence they discovered that we only required the Belgian care in preparing the land, to render us independent of any other country for flax of the finest description. The Commissioners returned, delivered their report, and nothing more was heard of the proposed duty. The Belgians were not so blind to their own interests as to impose a tax which would impoverish their farmers and restrict a valuable branch of their commerce. The Irish, however, formed the above-mentioned Association, followed the example of their foreign visitors, and despatched a deputation to the Belgians to inquire into their superior mode of cultivation, to engage experienced workmen to settle in Ireland and instruct them in their art. Having been favoured with extracts from the report made to the society, I have added them as an appendix to this pamphlet; calculating that at no very distant date they may also be of some service to the flax-growers of England. The climate of this country is less humid than that of Ireland. And, if we look at our vast and varied resources, at the immense importations of flax by our manufacturers, of linseed-oil by our merchants, and of oil-cake by our farmers, I cannot doubt that if a society were formed in England upon the same principles which instigated the formation of the society in Ireland, it would tend materially to advance the best interests of agriculture. The home market would require the whole produce, for many of our oil-mills are at a stand on account of the scarcity and high price of foreign linseed. The demand for linseed-cake infinitely exceeds the supply; and to show that there are ready purchasers for flax, it is only necessary to refer to the following statement which lately appeared in the Leeds Mercury.

"MARSHALL'S FLAX-MILL AT LEEDS."

"The following particulars respecting this stupendous building have been furnished by an eye-witness who has been permitted to inspect it a few weeks ago:—The building is 132 yards long and 72 yards wide (inside measure), one story or 20 feet high. The roof consists of 72 brick arches, supported by 72 iron pillars of the Corinthian order, and secured together by strong iron work. The brick roof has a thick coating of composition to prevent the water from coming through, and is covered with earth, from which has sprung up a beautiful grass close. There are 66 glass domes 48 feet round, 11 feet 6 inches high, containing 10 tons of glass. Window frames all of iron. Total weight of roof 4,000 tons. Cost with the

machinery £200,000. There are four steam-engines 100 horse power each; and two, 80 or 85 horse power each; and one engine 7 horse power, which does nothing but blow either hot or cold air into the room. The building covers more than two acres of ground; it is supposed that 80,000 persons might stand in the room, 60,000 upon the roof, and 50,000 in the cellar.—*Leeds Mercury*."

But the cultivation of the plant for the intrinsic value of the seed which it bears, would, I am persuaded, amply repay the cultivator, provided he consumed the crop upon his farm as a substitute for oil cake. The value of linseed per acre, exclusive of the flax, would probably not amount to more than that of barley; flax included, it would be worth as much as wheat; but when converted into food to fatten bullocks and sheep, its worth can scarcely be estimated. For independent of the return in the shape of meat, the soil would be rendered in a ten-fold degree more productive by the diffusion of the manure over the farm. An abundance of chaff would be produced, which is very serviceable as food for horses, or as manure for turnips. This I have proved. The stalks as litter must be equal to straw, and, on account of their oily nature, superior for the compost heap. The water, Mr. Blacker observes, in which flax has been steeped, would, if made into compost with fresh earth, be found most valuable. The richness of flax-water is fully shewn by the growth and colour of grass where flax has been spread to dry. I have, says he, seen a most luxuriant crop of oats upon land irrigated with flax-water, although a second crop. Similar effects have been observed in Somersetshire and Yorkshire.* Other writers also assert that water, in which flax has been steeped, become so insufferably putrid as to be rendered excellent liquid manure. The books that I have had an opportunity of reading on the subject of growing flax, all refer mainly to its cultivation for the sake of the fibre itself. About fifty years ago only, linseed cake was consumed in Germany as fuel. Even in Ireland, until within two or three years, linseed appears to have been but little appreciated; for the growers of flax are reminded not to steep it till after the seed has been thrashed.† But in a grazing country like England, where such vast sums are annually expended for foreign oil-cake, the growth of linseed upon a limited scale must, I repeat, well remunerate; and if any thing could be made of the flax more than its worth as straw,

* See Billingsley's Survey of Somersetshire and Middleton's Annals.

† See appendix on Saving the seed.

the value of the crop would be proportionably enhanced. Several experiments have been made in this part of Norfolk. The first by myself last year upon an acre of inferior land, which produced six coombs two bushels of excellent seed, and two waggon freights of flax. The seed was all disposed of for sowing, at thirty-six shillings per coomb, realizing £11. 14s. 0d. independent of the flax. In the present year between 40 and 50 acres were sown, on various soils, in different parishes, and miles apart; in some instances at least 50. With the exception of two or three acres on wet land, the remainder ripened early, and arrived at a degree of maturity which indubitably proves that the soil and climate of this country are admirably adapted to the growth of this important plant, and that it only requires a little care and attention on our part, in tilling and preparing the land for sowing, to render us, as far as respects linseed, thoroughly independent of foreign aid. The inquirer into the Belgian system, which is now practised in Ireland,* must bear in mind that reference is always had to the value of the fibre and not of the seed. To sow 160 lbs. an acre, which are three bushels, and expect a good crop of seed, would be absurd. Their motive, it will be seen, for sowing thick, is to ensure a fine fibre, to prevent the plant from branching out, and from being overloaded with seed. Six pecks is the required quantity. I sowed no more, and had six coombs two bushels in return. I have not thrashed any of my present year's crop, purposing to keep the seed in the straw till the spring. Mr. Barcham, of Antingham, Mr. Cubitt, of Witton, and Mr. Gower, of Dilham, have however forwarded the result of their experiments to me, and it appears that the produce somewhat exceeds five coombs per acre, which, considering all the disadvantages of improper tillage, want of frequent hoeing, pulling too soon, and inexperience in thrashing and dressing the seed, &c. I regard as equal to mine; and I think they sufficiently confirm my statements and opinions to induce a more enlarged cultivation of the crop.

SOIL AND ROTATION.

Linseed thrives best on a sandy loam, or on land of a medium quality. But it will not remunerate if sown on poor clays, wet, springy or gravelly soils. The condition of the land ought to be such as would produce a fair crop of wheat without manure. It should be ploughed up in the autumn, and kept clean throughout the winter by

* See appendix.

harrowing or light scarifying. In the spring the land is to be reduced to a garden-like fineness, and rolled rather heavily before sowing, in order that the seed may not be deposited more than half an inch or an inch deep. Afterwards a bushed harrow is to be drawn over it. The seed is generally sown broad cast, but I certainly prefer its being drilled at about seven inch intervals with blunted coulter, both on account of the evenness with which the seed can be put into the ground, and of the facility afforded for cleaning the land. It may be sown before and after corn, and other crops, but from an experiment made by Wm. Burroughes, Esq. of Hoveton Hall, in a field which had borne the preceding year a crop of wheat on one part, and turnips on the other, it was evident that the linseed grown on the turnip-land was much inferior to that on the wheat stubble. Ten or twelve bushels of bone dust per acre thrown on the land and harrowed in during the winter months will add greatly to the quantity and improve the quality of the linseed.

TIME FOR SOWING.

The best period appears to be in the early part of April, but it may be extended to May. The seed will generally be ripe in July, which is easily discovered by the brownness of the seed in the pods. The flax is then to be pulled up by the roots and laid in neat and even rows on the ground. After two or three days it should be turned carefully over with the shaft of a long fork; and when sufficiently weathered, tied up in small sheaves. These may either be made into a stack, or put into a house.

PULLING OFF THE SEED-PODS.

This may be done at leisure, and is work for women. It is called *Rippling*. The machine or comb for doing which is made by driving 16 or 18 iron teeth into a heavy beam of wood formed into a trestle. These teeth should be round, smooth, and tapering, standing about six inches out of the wood, and placed so close together that the pods cannot pass through; or they might be rivetted to a narrow plate of iron, and secured to the trestle, which is the better plan. Their substance is about that of the tooth of a drag-rake, but rather more sharp at the point. A woman stands before the trestle, having a girl at her side, and a sheaf placed at her feet. The band being taken off, and the seed rubbed out, is laid on the opposite side; when the girl takes up a small quantity of flax and gives it to the woman, who holding it firmly with both hands, dashes it repeatedly into

the comb, and with a jerk pulls off the pods. She then lays the stalks in the band, and when the sheaf is finished, these are tied up and removed.

DRESSING THE SEED.

In the absence of any precise information respecting this operation, and the extricating of the seed from the pods, I had recourse to the linseed crusher, and corn-dressing machine, which did the business admirably and expeditiously. After the loose straw had been taken off with a riddle, the pods were passed through the smooth cylinders, set so as to nip and bruise them without injury to the seed. They were then run through the winnower, the speed of the flyers being regulated so as merely to drive off the lightest of the chaff to which no seed adhered. The linseed that passed through the screen having been put aside, all the broken pods which ran through the spouts were collected, and again passed through the crusher with the rollers set a little closer, then through the winnower as before, and so on alternately, each time the rollers being set more close, till the whole was thoroughly separated from the chaff. The seed was then refined with ease.

EXHAUSTING EFFECT.

A great difference of opinion exists respecting this point amongst writers and practical men. In Yorkshire it is considered a good preparation for wheat; and certainly, if I may speak from the observation of the oldest labourer in this parish, a better crop of wheat was never seen on the land than that which succeeded my flax. It has been thrashed, and yielded eight coombs per acre, and weighed eighteen stone and four pounds per coomb. The quality of the land, as I have before observed, is moderate, with a coarse sandy sub-soil. The average cast of this description of land in the neighbourhood is reckoned at six coombs per acre of wheat and eight of barley. Foreigners sell the whole of their flax-crop, seed and all. Hence nothing is returned to the soil, and therefore it may justly be called an exhausting crop. They however cherish this above all other crops; the reason is obvious, for flax is undoubtedly a most profitable production. The greatest prejudices were once raised against the introduction of potatoes, Swedish turnips, mangel wurzel, and in fact against all those productions which have hitherto rendered agriculture so prosperous, and conferred such lasting benefits upon the community. None of those roots, nor

any of our grain, can be called indigenous to this country; for all were at first tried by way of experiment; and I am persuaded that a judicious introduction of linseed into our rotation of crops would tend materially to confer a similar benefit on agriculture. //

Nothing can more clearly evince the fattening properties of linseed than the striking effects produced by the offal, which is formed into cake when the oil is extracted. Repeated and extensive experiments have been made to fatten cattle with the seed itself, also with the oil. But on account of the inconvenience, trouble and expense of preparing the food, with the uncertainty of a profitable return, the use both of seed and oil are nearly discontinued, and the prevailing opinion now is, that the offal is superior to the pure seed. For, "there is nothing like cake!" exclaim many writers on the subject, and many farmers. Indeed the prejudices of some were carried so far at one time, as to pronounce the oil pernicious, and to recommend an article called double-pressed cake at an extra cost of two pounds per ton, instead of the cake commonly used. But I believe the merit of this discovery does not belong to Norfolk. A little reflection would have shewn how improbable it was that the seed crusher would be so regardless of his own interests as to leave oil, worth from £35 to £40 per ton in the cake, which he only sold for £10. That linseed oil will fatten bullocks experience has placed beyond a doubt. Amongst the fattest beasts ever sent to the London market from Norfolk, was a lot of Scotch heifers, grazed entirely on linseed oil and hay. But the quantity given per day, the cost per head, or any thing relative to profit or loss, I never heard. Farmers seldom keep account of such matters; hence the frequent failure of experiments. A bullock may be allowed in general to eat as much cake in a day as he pleases; but a nice regard must always be had to the quantity of linseed placed before him, and especially to the oil. Neither oil nor linseed should be used in a crude state, but formed into mucilage by being boiled in water. The seed must be first reduced to fine meal; one pound and an half of which, stirred into twelve pounds of water while it is boiling, with four pounds and an half of barley, bruised as flat as a wafer, and given when cold to a bullock of between 40 and 50 stone every day, will, in addition to Swedish turnips, be quite sufficient, or perhaps rather more than he would be inclined to eat. This small quantity of linseed will act well on the stomach, and the bullocks will thrive and fatten in a degree that can scarcely be credited except by the person who tries the experiment. In no instance has it failed. The quantity of seed may

be increased after the animal has been accustomed to it for some time, but I believe to no great extent. I have reduced this to a certainty from repeated tests. Therefore as oil is stored so abundantly in linseed, I think I may fairly attribute the failure of those who have so freely condemned the use of both oil and seed, to a want of proper inquiry into, and a prudent and systematic employment of their extraordinary fattening properties. It is just to state that the above investigation originated in the formation of one of those useful and patriotic institutions, called "Farmers' Clubs," at North Walsham, in the autumn of 1840, with which I have the pleasure of being connected. The club meets once in each month during the winter, when subjects which have been proposed at the previous meeting, on agriculture only, are discussed. The desirableness of fattening cattle on home-made food, rather than on foreign produce, was a subject brought forward at one of those meetings. I therefore had coppers erected, and commenced a series of experiments by incorporating linseed with corn or pulse, which ended in the production of the desired substitute for foreign oil cake. Specimens of the compounds were sent to the meeting, which occasioned an interesting discussion; and a vote of thanks was entered on the society's minutes. The last of my experimental bullocks for 1841 was disposed of at Christmas, at 8s. 6d. per stone. He weighed 60 stone 5 lbs. at 14 lbs. to the stone. Cost £7. 17s. 6d. thirteen months previously: so that he paid £17. 10s. for little more than one year's keeping. His common food was turnips or grass: 14 lbs. a-day of barley or peas compound were given him for forty-eight weeks, and an unlimited quantity the last five weeks; when, considering the shortness of that time, his progress was perfectly astonishing—not only to myself, a constant observer, but to many graziers and butchers who had had occasional opportunities of examining him. Altogether the weight of compound consumed did not exceed two tons four hundred weight, at the cost of only £3. 16s. per ton.

DIRECTIONS FOR MAKING CATTLE COMPOUND.

Let a quantity of linseed be reduced to fine meal, and barley to the thickness of a wafer, by a bruising or a crushing machine with smooth cylinders. Put 168 pounds of water into an iron cauldron, commonly called a copper, and as soon as it boils, not before, stir in twenty-one pounds of linseed meal; continue stirring it for about five minutes; then let sixty-three pounds of the crushed barley be

sprinkled by the hand of one person upon the boiling musilage, while another rapidly stirs and crams it in. After the whole has been carefully incorporated, which will not occupy more than five minutes, cover it closely down and throw the furnace-door open. Should there be much fire, put it out. The mass will continue to simmer from the heat of the cauldron till the barley has entirely absorbed the musilage. The work is then complete, and the food may be used on the following day. When removed into tubs, it must be rammed down to exclude the air, and to prevent its turning rancid. After a little practice the eye will be a sufficient guide to the proportions without the trouble of weighing. The process is very simple, and is fit employment for women or infirm men. It will be seen that these proportions consist of three parts of barley to one of linseed, and of two parts of water to one of barley and linseed included. Also that the weight of the whole is 18 stone when put into the cauldron; but after it has been made into compound and become cold, the weight will be found in general reduced to something less than 15 stone, which will afford one bullock, for a fortnight, a stone per day, containing one pound and a half of linseed. It will keep a long time if properly prepared. The consistency ought to be like that of clay when made into bricks. In the spring and summer months, germinated barley might be made into compound with great advantage. Bullocks will eat it with avidity, and thrive very fast upon it. The process is very simple. Let some barley be steeped about two days and the water drained off; after the radical or root has grown to nearly a quarter of an inch in length, it must be well bruised with the crushing machine, and as much as possible forced into some boiling mucilage, containing the same quantity of linseed, but a fourth less of water than would have been prepared for dry barley. It will soon turn sour, but the cattle will not refuse it on that account. Care must be taken lest the sprouts are suffered to grow beyond the prescribed length, or the quality will be materially injured; therefore it will be necessary to check their growth, either by spreading the barley about the floor or by running it through the crusher; it may be then used at pleasure. A different treatment must be observed in making compound with peas. Barley, as I have shewn, will readily absorb the oily matter from the linseed by simple immersion when boiling; but peas require to be boiled first, and the linseed added afterwards. To every pail full of peas put into the cauldron, about three pails of water is to be added. The peas must be boiled till they will yield, when nipped, a mealy substance, not

unlike baked or boiled potatoes. The water by this time will have nearly disappeared. A convenient portion of the peas should then be put into a stout-bottomed trough, with a small quantity of the liquor and a little linseed, which are to be immediately mashed with a rammer by a man, while a boy turns them over. This quantity being soon sufficiently united, remove it into a tub. The remaining portions are to be prepared in the same way. As the mass increases in the tub, it should be pressed firmly down with the rammer, in order that it may retain the heat as long as possible. Should there be more liquor in the copper than is required for mashing, it may be put by degrees into the tub with the mashed peas and linseed. The length and size of the rammer ought to be adapted to the height and strength of the person employed. It will be found convenient to have two or three at hand, varying from eighteen inches to two feet long, tapering, and from four to six inches square at the bottom. A pin should be passed through the top for the convenience of working it with both hands at once. Peas will take less time to boil after they have been steeped a few hours; but observe, they will not require so much water in the caldron as if dry. Another plan of making compound with peas, is to steep them eight or ten hours, then drain off the water; and when dry externally, pass them through the crusher, the rollers set closer the second time, so as to reduce them to something like a mealy consistency. Sometimes they can be sufficiently bruised by the first operation. Put equal quantities of this meal and water, by measure, into the cauldron; let them boil about twenty minutes; then add a fourth or fifth of linseed meal to the quantity of peas, treating it precisely in the same way required for barley compound. The extreme ease with which peas are crushed after being steeped will fully compensate for the trouble. Smooth rollers will scarcely make any impression on hard peas, and the labour is excessive. Light and ordinary wheat may profitably be consumed according to this system; but as it is very adhesive when cooked, a mixture of barley will be found beneficial. It is to be crushed in the same way as barley, but will carry more water. Oats, on the contrary, require less water. Beans may be treated like peas. Rye I have never tried, nor buckwheat; the latter might, I expect, be used with great effect. I am now trying potatoes. For this last attempt the public will be much indebted to Mr. Cubitt, of Witton, tenant to Lord Wodehouse; I am persuaded that it will be found a most economical substitute for oil-cake, especially to those who grow potatoes for the purpose of consuming them on their

farms. Mr. Cubitt presented the first specimen of this food at the society's meeting in May last; the potatoe crop being then nearly exhausted, he could only state that his bullocks ate it with avidity. As soon as potatoes this summer were forward enough, I prosecuted the idea in order that the earliest information might be communicated. To make it, nothing more is required than to mash up a little linseed meal with some boiled or steamed potatoes. Nor let it be despised on account of its simplicity. It is a neat and convenient mode of placing artificial food before bullocks, and must be superior to cake made of all sorts of foreign rubbish. To assert that such offal is really superior to the sound and wholesome materials of which the compounds are formed, is like asserting that bran is superior to wheat. From a letter now before me, I perceive that it requires sixteen coombs of linseed to make one ton of cake. Now if the number of tons imported into this country alone were multiplied by sixteen, I question whether it would not amount to infinitely more than is grown on the whole continent of Europe. We however, receive the supply; but of what does that supply consist? The seeds of hemp, and of many other plants which are grown solely for the purpose, besides the seeds of many wild plants that infest the fields, are crushed to obtain the oil. The stones of fruit, nuts of forest trees, and ground nuts,* yield an abundance of oil, which, in the form of cake, are largely exported from various quarters. And whither are they sent if not to England, the great mart of the world? Let a cake be taken from every cargo that reaches our ports during a given period and examined, and I expect that scarcely two will be found alike. Now if they were all made of linseed, they would of course, in some measure correspond. But I much doubt whether even the presence of linseed could be discovered at all in some of them. Samples of cake have been sent to me for examination, and I have seen some tested in which the refuse of linseed was not perceptible, but enough of filthy sediment instead, at the bottom of the vessels. A few months since I paid a visit to one of the first corn-markets in this county, with the view of obtaining information respecting the quantity of oil-cake consumed in that neighbourhood. I was astonished at the enormous amount, which was calculated to exceed the absolute rental of the land. Some of the leading agriculturists assured me that

* The ground nut is becoming also a valuable article of commerce, and this with other nuts mentioned, yield a rich supply of oil and oil-cake for the use of cattle. Sir Fowell Buxton's *Slave Trade and Remedy*, page 322. Large quantities are also made in India.

their own consumption exceeded fifty tons each a year; that numbers consumed much more, even from one to two hundred tons. While conversing upon this subject, I was politely challenged by a gentleman to inspect a sample of oil-cake which he had brought that day for sale, and to detect, if I could, anything besides linseed. For, said he, the maker with whom I deal, has all his linseed sifted, so that no other ingredient may be incorporated with it. He placed in my hands, in the presence of a third person, one of the best prepared cakes that I had ever seen; but on breaking it, innumerable unbroken seeds of the *sinapis* order were easily distinguished; he frankly acknowledged his mistake; and I am sure he was really under the impression that the article was genuine. Nor do I attribute to our merchants in general, any intention of palming upon the public a spurious article. The foreigners are the impostors; the English the dupes. But will British agriculturists any longer expend their millions with foreigners? Already the effects of the tariff and of the corn-law are felt in the reduction of the price of meat and of barley. Now every farmer who fattens his cattle with foreign cake, indirectly becomes himself an importer, and contributes directly to reduce the price of those articles; for all the meat raised from the use of cake might have been produced from his own corn, the supply at market lessened, and a consequent higher price obtained for that sold. Hence we may reasonably account for the low price of barley, the high price of oil-cake, and the unprofitable return for grazing last year. The reason assigned for the low price of barley, was an immense supply beyond the demand. A precisely opposite reason was assigned for the high price of oil-cake, for the demand exceeded the supply. At one time the farmer had, I believe, to accept from ten to twelve pounds per last for his barley, and to pay ten or twelve pounds per ton for cake. Therefore the cost of a ton of cake was the price of twenty coombs of barley; and we are entitled to assume, that, for every ton of cake consumed, twenty coombs of barley were forced upon the market, which would have afforded upon the principle I have laid down six tons and a half of compound. To form some idea of the gross amount of barley that might have been consumed instead of cake, we have merely to suppose that fifty thousand tons were imported; now, as twenty coombs of barley were only equal to one ton of cake, fifty thousand tons of cake were equal to twenty times fifty thousand, or one million coombs of barley; therefore, as twenty coombs of barley will make six tons and a half of compound, a million would have afforded three hundred and

twenty-five thousand tons, all of which I calculate would have been a clear saving, and returned to the pocket in the sale of meat; because if one-sixth of the barley sent to market last year had been withheld and made into compound, the probability is, that consequent on a short supply the price would have advanced three shillings per coomb, and the remaining five parts realized something more than the whole six—that is to say, as sixty coombs of barley at 12s. per coomb would amount to £36, fifty coombs at 15s. would obtain £37. 10s. consequently ten coombs in every sixty have been worse than thrown away, for the money was given to the encouragement of foreign agriculture and to the employment of foreign labourers, while English labourers for the want of work were compelled to seek an asylum in union houses, where they were maintained in idleness. Scarcely a guinea of those immense sums paid by the farmers of this to the farmers of a foreign country for oil cake met an adequate return. Thousands of cattle were sold at Smithfield which did not pay the wages for attending, and some not even the drovers' expenses. The best returns left nothing for cake, and so long as foreign produce is substituted for our own to fatten cattle, the effect in future years will be similar to the past. Besides the demand for barley from many causes decreases every year, and as the ports are open at a less rate of duty, the surplus must be infinitely greater. Surely then it must be incumbent on the agriculturists of this country to alter their system of farming, and obtain a supply of artificial food from the resources of their own soil. In proportion as the cultivation of barley could be curtailed the supply must necessarily be diminished, and the command of price placed more in the growers' power. The money value to him of the less would as I have attempted to shew be equal to that of the large supply. To prevent so great an excess in future, the substitution of one acre in seven of all lands that were intended to be sown with barley to the growth of linseed, peas, and beans, would reduce the supply to the extent I have mentioned, have precisely the same effect on the price of barley, be extremely beneficial to the soil in the rotation of crops, and afford some millions of tons of nutritious food upon which cattle and sheep of all descriptions will thrive and fatten beyond the belief of those who never tried the experiment, returning at the same time as rich and lasting a description of manure as can possibly be obtained from any other source. I certainly had not calculated upon finding the advantages of feeding cattle on compound conveyed so strikingly to the growing crops, as I have lately been called upon to

witness, particularly in a field belonging to Mr. Harlee Playford, of Northrepps. It was divided into sections—manured with different kinds of compost, and sown with turnips. Those raised from manure made by bullocks fattened with compound are decidedly the best.

Connected with our present system of farming is an immense annual outlay for foreign manures, and in which doubtless as many impositions are practised as with cake. I believe if the Belgian mode of making manure were practised in this country, we should be rendered perfectly independent of foreign aid. The Flemish farmers say, "that without manure there is no corn; without cattle there is no manure; without green crops and roots cattle cannot be kept, and he who can make manure at the least cost is the best farmer."

I have exemplified the beneficial results of house feeding cattle on green crops, from two years' experiments, and this year all my bullocks will be provided with a separate box.

I do not speak of turnips, because the management of those crops is too well known in Norfolk to require any observation from me. But with respect to the economy of carrying grass from the field and giving it to bullocks in houses, perhaps a few remarks may not be superfluous. The greatest care should be paid to the economical use of straw in winter, so that a proper supply may be at hand for summer grazing. One half of the straw generally consumed in farm yards might by care and attention be reserved for this purpose. First, by properly stacking and thatching it—2dly, by placing troughs* upon the buildings to conduct the rain water from the yards—and 3dly, by keeping cattle longer in the fields in winter. There is no question as to the benefit derived from consuming turnips on the land in winter, but considerable doubts are entertained respecting feeding off grass in summer. I have heard it repeatedly asserted, that better wheat is grown where grass has been mowed for hay, than where it has been fed down. This has been frequently proved in fields divided by hurdles, one part fed, the other mowed, but both treated alike for wheat. Admitting that the land obtains no perceptible benefit by feeding off the grass in summer, how strongly

* Cast-iron troughs are sold at 6d. per foot, the cost of which would be amply repaid the first year, and they could remain as farm covenants if put up by the tenant.

does it argue in favour of grazing cattle in houses, if only for the sake of the manure. But the advantage is greatly augmented when we consider that one acre will house-feed three bullocks, whereas it will require three acres to feed them in the field. Taking the value of the manure into consideration, the superiority of summer grazing in houses is incalculably great. A piece of lucerne, in proportion to the size of every farm, ought to be grown, and a few acres of early potatoes planted—these will always afford a supply should the grass at any time fail, and they will be found convenient as a change of food. If not wanted, the potatoes of course will remain as winter store. To this system let the use of compound be added, and the farmer will be rendered comparatively independent of turnips, which at best is an expensive and precarious crop.*

Great disappointment too is often experienced in the use of oil cake. Bullocks will refuse to eat it, if previously fed with some of a better quality; and it is but reasonable to suppose that their progress must be greatly retarded by a change for the worse. But no such inconveniences adhere to the use of compound, for the

DEGREES OF FATTENING

may be regulated in strict accordance with the convenience and intention of the farmer, by mixing up a very small quantity of linseed with grain at first, and increasing it at pleasure. Upon this principle the condition of cattle may be advanced or retarded as circumstances may require.

From the simplicity and ease of making compound, the small amount per ton, and the very favourable reports of all who had used it, an extraordinary degree of interest was excited at the conclusion of the past grazing season. To gratify which and to afford the public an opportunity of acquiring the most accurate information, an especial meeting of the society was convened, by advertisements in the county papers and by circulars, for the 19th of May, agreeably to the following form:—

* Linseed sown on land where turnips have failed at the end of July or beginning of August, will produce an abundant supply of green food for mowing. The quantity of seed required, is from two to three bushels per acre.

NORTH WALSHAM FARMERS' CLUB.

The Hon. W. R. Rous, President.

An especial meeting of this society will be held on Thursday, the 19th of May, for the purpose of enquiring into the results of experiments made by several members of the club, in grazing bullocks with linseed compounds instead of oil cake.

Cattle and samples of the compounds with which they have been fed, will be shewn in the yard of the Bear Inn, at four o'clock. At the same time a crushing machine will be exhibited at work, and linseed formed into compound on the spot. The public are cordially invited to a critical investigation of the exhibitions, and also to join the club in the evening's discussion on the importance of fattening cattle on native instead of foreign produce.

G. GOWER, Hon. Sec.

Dilham, April 26th, 1842.

At the time appointed, the Hon. W. R. Rous, Sir Henry Durrant, Sir T. F. Buxton, Rev. J. Burroughes, Mr. W. Burroughes, Mr. Mott, Jun. the Rev. — Wilkin, Mr. Smith, the Rev. G. Fauquier, the Rev. Cunmin, Messrs. Amies, Gower, Brown, Read, Cubitt, Cork, Allen, Barcham, Clowes, &c. &c. attended.

The beasts for exhibition were six Durhams fattened on compound and two on oil cake by Mr. Gower, of Dilham; four Durhams by Mr. Cubitt, of Witton; four Scots by Mr. Brown, of Trimmingham; two Devons and a milch cow by Mr. Warnes; and three fine seven months' old calves by Mr. Dolphin.

In the yard three coppers had been erected; two for the purpose of making the compound, and the third for heating a portable kiln by steam, invented for the purpose of drying damp corn. Crushing machines, linseed grown by Mr. Warnes, flax in the straw, and samples of compound, were subjected to close inspection. The water was then boiled, barley and linseed reduced by the crushers, and compounds made. The gentlemen afterwards adjourned to the great room, where the Hon. W. R. Rous opened the business by stating the object for which they were met, pointing out the importance of the inquiry as involving the question, whether we could fatten cattle from the produce of our own soil, or whether we were to continue dependent upon foreigners. An answer to this question might prove of great importance to the nation. Mr. Rous hoped that if any gentleman had doubts, he would express them, as the subject was of consequence. He was sure that the meeting would give a patient hearing to all who wished to address them. I had then the pleasure

of moving a resolution to the following effect:—"That the meeting attributing the low price of barley and the unprofitable return for fat bullocks to the unlimited use of foreign oil cake, strongly recommend its disuse in favour of native produce."

Mr. Brown, of Trimingham, alluding to his four scots, stated that they were bought on the 6th of November last in very poor condition and lame. They were sent to his off farm, called "Hungry Hill." From the name the meeting might judge of the quality of the land. The bullocks were fed first on white, then on swedish turnips. On the 1st of March he was induced to give them compound, at the rate of fourteen pounds a day each, for five weeks, after which time he increased the quantity to twenty-one pounds a day, with fewer turnips, until the last fortnight, when the allowance was unlimited. But the bullocks ate barely a skep of turnips each per day. His compound was made of 78 lbs. of water, 14 lbs. of linseed meal, and 5 lbs. of barley. Before trying the compound, he was greatly prejudiced against it, but now he recommended it to general adoption.

Mr. Gower, of Dilham, said that the bullocks he had exhibited were not shewn as particularly fat beasts, but as having done more than if fed on oil cake. The two bullocks that he had kept on cake were more backward than the others. His prejudice being much in favour of oil cake, he put them in boxes by themselves, thinking he could force them to a level with those fed on compound. But he was mistaken. With respect to the comparison of cost of keeping; the two on cake consumed six shillings' worth per week each, and those on compound something under four shillings per week each. Last Friday he turned out all the experimental beasts to grass; still continuing to give oil cake to the two, and compound to the rest at night. But the former would not eat the cake at all, while the others ate the compound with avidity. Mr. Gower said that he should much like to see twenty beasts, bought on Norwich Hill, put on the weighing machine, and equally divided, one part to be put on oil cake, and the other on compound. Indeed he challenged any gentleman present to the test. He would himself buy a dozen beasts, and allow him who was in favour of cake to divide them, taking six and leaving him six, and he should be much mistaken if his on compound did not thoroughly beat the others.

Mr. Cubitt, of Witton, said that his bullocks cost for the first month sixpence a day each. He gave them afterwards an unlimited allowance, but they never exceeded the cost of a shilling a day each. He had tried the experiment last year with two lots of bullocks

placed in separate yards; one on compound, the other on oil cake. That on compound did the best, at less cost, and more profit. Mr. Cubitt was perfectly convinced of the advantages to be derived from grazing on home-made food, both as respects the profit of the grazier and employment of the labourer. A gentleman had much ridiculed a lot of his (Mr. Cubitt's) bullocks. They were certainly in a bad state from poverty, and from the effects of the epidemic. His friend had however seen them lately, when he expressed his astonishment at their improvement, and his conviction of the fattening properties of the "nostrum" as he had once termed the compound. In truth the four beasts that he exhibited in the yard, were part of that very lot, and so poor were they at Christmas that he did not think it possible to fatten them without grass.

Mr. F. Clowes, of Hemsby, observed that he had been induced to make trial of the compound. At that time he had been paying £10 per ton for cake. He allowed ten bullocks nine pounds a day each of oil cake, which was about £2. 12s. per week. To another lot of ten bullocks he allowed one coomb of barley and one bushel of linseed per week, which, after having been reduced to meal by his crusher, were added to 42 gallons of boiling water in the copper, and made into compound; the utmost cost of it was £1. 1s. 6d. This made £1. 10s. 6d. difference per week on ten bullocks in favour of the compound, and he was quite as well satisfied with the progress of this lot as with that on cake. In fact he would offer a challenge to any gentleman. Let ten or twenty bullocks be forthwith bought, and divided into yards. His opinion was, and he would back that opinion by any reasonable wager, that those on compound would be the fattest and cheapest bullocks.

Mr. John Postle had not himself made trial of the compound. He however considered the experiments that had been made and the stock exhibited very creditable indeed. He resided near Mr. Gower, and had therefore an opportunity of criticising his bullocks. He did so week after week up to the present time. From what he had seen, and the progress the bullocks had made from day to day, and looking at all the facts, he intended to give the compound a fair trial himself. All those with whom he had conversed on the subject, and who had tried the merits of the compound, had declared themselves satisfied. He considered the foreign oil cake much deteriorated in quality, and it certainly appeared that there was more real nutrition in the compound than in the oil cake now used. Mr. Postle

hoped that if any gentleman had any observations to make, they would do so with frankness and candour.

The President would rejoice if the meeting should be induced to consider the object successful; and in allusion to what had fallen from Mr. Cubitt relative to employment, he thought the question more important as it tended to increase the demand for labour, as every boy so employed would be a deduction from the poor's rates, independently of training him up to be a useful and industrious labourer. If any strangers who had given them the pleasure of their company had any objections to offer, he trusted they would name them in the room, and that no one would leave dissatisfied without affording them the opportunity of explanation.

Mr. Richardson very handsomely expressed his satisfaction at what he had seen of the specimens of fat bullocks, and experiments exhibited. As a stranger, with many others, he thought they ought all to be obliged to the North Walsham Association; and he had no doubt but their measures would be useful, and ought certainly to be much further tried. But as this was the first time they had the opportunity of inquiring into the subject, it was scarcely right to ask them to agree to a measure of which they were so recently informed. He therefore suggested the omission of their opinion in the resolution.

Mr. Trivet Read was extremely gratified with what he had seen and heard. He had no doubt but that the adoption of the compound would be very beneficial to the farmer, even if he could only convert his ordinary corn into food to fatten his stock. For his own part he should turn his attention to the subject; and he was persuaded that the experiment would be made to a considerable extent.

Mr. Redgrave was highly pleased with the exhibitions; but having had only that day's experience, he did not like to pledge himself to give up the use of cake entirely. It might be policy, as Mr. Warnes said, to relinquish foreign in favour of our own produce; but if all in that room did agree to do so, it would have little effect on the price of barley, unless the example was followed by the whole kingdom. He was himself an occupier of light land, and he found the best way of farming it was by feeding off the turnips with sheep, giving them at the same time oil cake. He should be glad to learn whether sheep had been tried on compound.

Mr. Gower assured Mr. Redgrave that he had seen some sheep on Mr. Brown's farm at Trimingham which were fed on compound.

They were above the average quality of sheep in that district, or those shewn for sale on Norwich Hill. They ate the compound very greedily, and he saw no reason why it should not be as good for sheep as for bullocks.

The President then put the resolution, confining the opinion to the association, which was unanimously carried.

The strangers were then invited to the anniversary meeting in the autumn, Mr. Warnes assuring them that his bullock and cow should be sent home, fed on compound as usual, and be again submitted to their inspection on that occasion.

There were other members present who had also used the compound; but having disposed of their bullocks, were not called upon to state their experience, which is much to be regretted. The ingenuous statements however, of those who did address the meeting, with the liberal propositions made by Mr. Clowes and Mr. Gower, appeared so satisfactory, that preparations are being made, in many parts to adopt the system upon an extensive scale. Cylinders for crushing linseed and grain have been placed in the bone-mills at Bradfield, and in several corn-mills; so that with the addition of hand crushers, there will be no lack of means to prepare the materials. Thus far our own neighbourhood is abundantly prepared, but the North Walsham Society, desirous of extending the benefit, with the most disinterested liberality, have issued an advertisement, of which the following is a copy:—

NORTH WALSHAM FARMERS' CLUB.

The Hon. W. R. Rous, President.

The public are most cordially invited to the Annual Meeting and Dinner of this Society on Friday, the 28th instant.

To guard against unfavourable weather, Spanton's Booth will be erected, and ample shelter afforded, on the grounds of the Rev. W. F. Wilkinson, near the town.

The bullocks shewn at the especial Meeting, on the 19th of May last, will, with an eleven-month-old calf, be again exhibited, and afterwards slaughtered, in order to afford the most accurate information respecting the fattening properties of native produce when formed into compound. Specimens of the food upon which they have been fed, with the process of making it, will be submitted to the closest inspection, and every particular respecting the cost and quantity consumed, fully communicated. Steam apparatus upon a new and simple construction for cooking farm produce will be seen at work; also a variety of machines for crushing linseed and grain.

Between twenty and thirty samples of linseed, flax in straw, and specimens of wrought flax, of Norfolk growth, will be arranged in the booth; and at two o'clock the company will assemble to inquire into the desirableness of forming a society to extend and improve the cultivation of that important plant.

The Committee of Management hope that gentlemen and farmers in the neighbourhood will kindly send for exhibition specimens of turnips, mangel wurzel, carrots, potatoes, &c. &c. and any description of live stock that may tend to advance the interest of agriculture.

Notice to be given to Mr. Cubitt, Librarian to the Club, North Walsham, a few days previous to the meeting, in order that proper arrangements may be made for their reception and classification,

G. GOWER, Hon. Sec.

Dilham, Oct. 5th, 1842.

Dinner at the Bear Inn, at Five o'clock.

I purchased the bullocks alluded to of Mr. Fromow, salesman, on the 8th of January last, at £9. 15s. each. It is somewhat remarkable that they were the refuse of ten Devons that belonged to Mr. Rush, land agent, of Wymondham, who kept them some time on an off farm; but on account of their inferiority to the others, he sent them to Norwich Hill to be sold. They were in very low condition, and certainly when put into the boxes on the 15th January, looked most unpromising animals. They have been thus kept day and night, up to the present time, except when shewn at North Walsham on the 19th of May. They will be again exhibited at the ensuing meeting, not as extraordinary fat beasts, but as specimens of what may be effected in a given time. The result of the experiment is in reality more satisfactory than if the bullocks had been selected on account of an extreme aptitude to fatten. Because, if the worst description of cattle can be made fat upon this system, of course the best can. These bullocks are in higher condition than those which I grazed last year, and have, to use a provincial term, "done better" in the same time, which I attribute to their having been constantly confined and carefully protected against flies. They have been allowed an unlimited quantity of lucerne and clover, cut short with an engine, and on the average consumed 4s. 9d. worth per week each of either barley, beans, or peas compound; lately potatoes were added as a substitute for grass, and now they are allowed some turnips.

On Saturday, the 16th of July, exactly six months after they had been put into the boxes, the bullocks were examined by competent judges, not by persons selected for the purpose, but accidentally by two gentlemen who had travelled a long distance to enquire into the truth of a report that cattle could be seen at Trimingham, in Norfolk, fattened without the aid of oil cake. I asked them whether they considered them fat? Certainly, was the reply, and fit for the London Market—one in particular. Therefore it is obvious that cattle may be fattened in six months, and two returns made in the year. They had then eaten of compound at the rate of 3s. 11d. per week each, which allowed £5. 1s. for turnips and grass. Let those who wish to try the experiment, place their bullocks in boxes on the first of January, and return them at the end of June, when they will have consumed the last of the turnips which are the worst, and the first of the grass which is the best, then replace them with the others, which will consume the last of the grass which is the worst, and the first of the turnips which are the best, allowing them a liberal and equal proportion of compound.

It will easily be seen that the advantage of a quick return consists in selling the same weight of bones with a less proportion of meat than if kept a longer period to obtain a greater increase. For, keeping the same price of meat in view, suppose an ox is sent, after having been grazed six months, to market, and you are offered £21 for him, at 7s. per stone, which you refuse, and keep him six months longer; you then sell him at 7s. per stone; the increased weight during the latter time will chiefly consist of meat, and the return for food will be much less than for the former six months.

To make the case more clear. I expect that an ox purchased at ten guineas, would at the end of six months weigh 60 stone of 14 lbs. to the stone, which, if sold at 7s. per stone, would amount to £21, and repay for his keeping, 10 guineas; but if retained six months longer, his weight would not exceed 80 stone, which would only amount to £25, leaving a balance in favour of the quick return of £3. 10s.

The heifer or rather cow is one of the best description of what is termed "Norfolk Stock;" and is certainly no discredit to any breed. She was shewn on the 19th of May, as highly recommendatory of the compound in producing an abundant supply of milk with an increase of condition at the same time.

In order to ascertain whether calves could be fattened with profit on compound, and sent to London like running calves, I had one of

six months old placed in a box and treated as the bullocks. It is now fatter than could be expected for the time, and will probably be killed on the day of the meeting. I am persuaded that calves might easily be made to weigh 30 or 40 stone each at a year old.

The success which has resulted from these experiments must in some measure be attributed to the particularity observed in feeding and cleanliness, both as respects food and litter. A bullock ought never to be long without food, and a clean lock of straw to rest upon; for when he ceases to eat he will lay down and ruminate, seldom rising except to eat again. My bullocks were tended early and late. In winter by candle light, morning and evening. Grass, as I have before observed, was cut short with a hay cutter, and the turnips small, with an engine used for sheep, having one or two rows of the knives taken out. The smaller pieces left by them in the cribs were mixed with compound and readily eaten, or taken away and given to other cattle. We found this a neat and economical plan; and, as bullocks have a distaste to that part of the turnip nearest the tail, a slice was always cut off before it was put into the machine, and given to store stock or pigs.

These accounts may be considered unnecessarily minute, but it should be remembered that I am in some degree answerable for the success of measures I so strongly recommend. To prevent a failure on the part of those who adopt them, I have written this pamphlet, to the directions of which, if they strictly adhere, I am confident that the result of their experience will be similar to mine. Doubtless many improvements will be suggested and many digressions made; but in justice to myself it must be particularly observed that I am not accountable for the schemes and plans of others. Nor do I arrogate to myself the merit of discoveries that admit of no improvement. On the contrary I think that the application of machinery, aided by chemical research, would greatly facilitate the cooking department in large establishments. A new agricultural era has commenced, fraught with consequences of no common interest. Already the effects of the corn-law and of the tariff are felt; and unless vigorous measures are taken to counteract them, the British farmer must inevitably be involved in difficulty, distress, and ruin. To avert such calamitous events, it is the duty of every individual, however obscure, to offer the best remedy in his power. I have ventured to propose a trifling alteration in the rotation of crops, and the conversion of the produce into cattle-food as a substitute for foreign oil cake. Before this mode of grazing was in any degree

consolidated, I made many experiments which are not all alike successful. Therefore I hope the inquiry will be pursued: and should my attempts prove only forerunners of better things, I shall rejoice in having laid a foundation, upon which others may build a more perfect system.

APPENDIX.

Extracts from the Farmers' Magazine of June, 1841.

"The Flemish Farmer calculates how much manure he may require for his land every year. No crop, except buck-wheat, is sown without some manure, at least by all good farmers. If it can be bought at a reasonable rate, the outlay is never grudged. If it cannot be purchased, it must be made on the farm. A portion of the land must be devoted to feed stock, which will make sufficient manure for the remainder, for the farmer thinks it better to keep half the farm only in productive crops well manured, than double the amount of acres sown on badly prepared land. Hence also he does not reckon what the value would be of the food given to cattle if sold in the market, but how much it cost him to raise it, and what will be the increase of his crops from the manure. The most rapid improver of loose sands is rich liquid manure, the collection and preparation of which is an object of primary importance. Every farm has, near the stables and cow-houses, one or more capacious tanks, into which the urine of the animals and the washings of the stables flow, and every exertion is made to increase the quantity and improve the quality of the tank liquor. The tanks are generally sunk below the level of the ground, and have the sides built with brick, and the bottom paved. They are of various dimensions. In a small farm of 30 or 40 acres, it is generally 20 feet long, 12 wide, and 6 deep, with a partition in the middle and arched over, leaving a small round opening for the pump, and another large enough to enable a man to empty the earthy deposit which accumulates at the bottom. Sometimes the tank is round, with a dome top, and so deep in the ground, that it has a foot or two of earth upon it. A tank of some kind or other is considered as indispensable an appendage to a farm as a barn or cow-house. The farmer would as soon think of dispensing with his plough as with his tank, and no expense is spared to keep it well supplied. A small tub or tank sunk in the ground in some corner, receives the contents of all liquids which can in any way be useful, and such as in our household are thrown away or wasted and lost. It is calculated that every beast produces at the rate of 10 or 12 tons of dung, and 26 hogsheds of urine every year.

Liquid manure may be applied to plants in every stage of their growth, if it be judiciously mixed with water so as not to injure the young & delicate roots by its caustic nature. All those who have had long experience of the good effects of liquid manure, on light soils, persevere in its use. But let it not be imagined that solid manure is undervalued. The Flemings are as careful of this, and as anxious to increase it by every means in their power as the best English farmer can be. The collecting and preparing of manure is a profession of itself. In order to increase as much as possible the quantity of solid manure, there is in most farms a place for the general reception of every kind of vegetable matter which can be collected; this is a shallow excavation, of a square or oblong form, of which the bottom has a gentle slope towards the end. It is generally lined on three sides with a wall of brick, to keep the earth from falling in, and this wall sometimes rises a foot or more above the level of the ground. In this pit are collected parings of grass, sods from the sides of roads and ditches, weeds taken out of the fields or canals, and every kind of refuse from the garden; all this is occasionally moistened with the washings of the stables, or any other rich liquid; a

small portion of dung and urine is added if necessary, and when it has been accumulating for some time it is taken out, a portion of lime is added, and the whole is well mixed together; thus it forms the beginning of a heap, which rises gradually, and in due time gives a very good supply of rich vegetable mould or compost, well adapted to every purpose to which manure is applied.

Liquid manure is an additional means of producing a certain and abundant crop, not merely a substitute for the dung heap. The only certain means of obtaining manure is by feeding cattle. No pastures are required in the light lands of Flanders for grazing. Meadows along the banks of the rivers, are mown to feed the cows with grass in the stalls, or to make hay for winter fodder. The whole system of husbandry is founded on the supply of manure, and a considerable portion of the crops are merely subservient to this purpose. The immediate profit of the cattle is trifling, if they do not even cost more to feed than their produce will repay; but, the manure must be had, and *he who can procure manure at the least cost is the best farmer.*

Keeping this in view, all the cattle are kept in stables that none of the manure may be lost; and every mode of feeding tried which will increase it at the cheapest rate, meadows being scarce and hay dear in those parts of the Netherlands where the soil is sandy. The chief food of cows in summer is grass, barley, or oats, cut in a green state, clover, tares, and spurrey; and in winter cabbages, beans, and roots. These last are not given in their natural state, but soaked in warm water, or boiled into a mess, which is given milk warm to the cows in troughs, so that it may be truly said that the cows are fed like pigs. The straw is used chiefly as litter for the horses. The cows often lie on smooth bricks, which are washed clean twice a day. There is generally a deep gutter along the wall behind the cows, into which the water, soil, and urine drain, whence it is conducted to the tank. The efficacy of the liquid is much increased by adding rape cake, and other vegetable substances. This is usually done a short time before it is put on the land, as it would otherwise ferment too much.

PUBLIC MEETING IN STEWARTSTOWN.

Society for the Improvement of the Growth and Culture of Flax.

[From the Newry Telegraph of September 29, 1842.]

Since this Society has commenced operations, it has been our pleasure to witness a manifest improvement in the growth and after-treatment of that long-neglected plant—flax, and already this year a still greater improvement is visible. It is, therefore, to be hoped that a Society calculated to do such a vast amount of good will spread, at least through the North of Ireland, until the new system of treating the crop has become general, particularly as our country is blessed with a soil admirably suited for its adoption.

To carry out the intentions of the Association, to have as many Branch Societies in the North of Ireland as possible, a meeting was held (as advertised in *The Telegraph*) on Monday last, in the Court-house at Stewartstown, for the purpose of establishing a branch to extend over an extensive and well-cultivated district of the County Tyrone, of which Stewartstown is the centre.

There were present at the meeting—Sir Thomas Staples, Bart. Lissan; Nathaniel Alexander, Esq. M. P. Portglenone House; W. L. Conyngham, Esq. Spring Hill; E. H. Caulfield, Esq. Drumcarn; Samuel R. Magill, Esq. Cookstown; John Little, Esq. and the Rev. H. Green; besides a number of other Gentlemen from the town and surrounding country.

A short time after one o'clock, on the motion of NATHL. ALEXANDER, Esq. M. P. seconded by W. L. CONYNGHAM, Esq.

Sir THOMAS STAPLES, Bart. took the Chair, and called on Mr. Skinner.

C. G. M'G. SKINNER, Esq. then addressed the meeting. He said--In accordance with a requisition from many gentlemen in the neighbourhood, I present myself as the Secretary of the Society for Promoting the Increase of Growth and better Preparation of Flax in Ireland. I wait upon this meeting to lay before it a statement of its objects, views, and proceedings, that the meeting may deliberate on the expediency of forming a branch association to co-operate with the parent society in working out its views. That you will deem the subject of much importance to the welfare of this country in general, and to that of the farmer individually, I feel well assured. You will readily admit the great staple produce of Ireland is in fact partly dependant on our success in raising the raw material, and its interests are deeply involved in the question. The linen trade has long been established in the North, where still the lower rates of wages than can be given the weavers of England and Scotland, sustain it; and above all, those peculiar qualities of our climate and water, that render Ireland so eminent for bleaching, in which, comparatively with all other countries, she so much excels. In fact, linen bleached in either England or Scotland is, when compared with that bleached in Ireland, as mortar to snow. How important then is it that we should endeavour to render our manufacturers independent of the foreign supply, especially in seasons such as the present, when abroad the crop of flax this season is a complete failure, while our own crop is more abundant than usual, though, alas, so wretchedly treated, from the ignorance and mismanagement of the farmer, as to be greatly deteriorated in the quality that it should have produced. That our soil and climate can produce it to any amount and of any description there need not be a doubt. The Belgian agriculturists who have been brought to this country by the society, bear ample testimony to this fact, and one of them, M. Demann, has written a very instructive treatise, which will be found appended to the pamphlets before me, and as in it he has made reference to me, I can, if necessary, fully bear him out in what he has stated, and the reasons he had adduced are satisfactory and well-founded. The case is also proved daily in our markets by finding occasionally exhibited accidental samples of the most superior description of flax. This fact is well known to those who are in the habit of purchasing flax, or attending flax markets; how can this be accounted for, but to some chance hit of the farmer? When asked, the farmer cannot account for it, nor is he aware of the superiority of the sample, or of its intrinsic value. I need illustrate this but by one anecdote I heard last week, and many such are doubtless known to some present. It was no later than last week, travelling with an English gentleman, I was informed by him that he found a very superior sample of flax out of a lot which he had purchased at the Tandragee market. He sent this sample to parties in England, who were well acquainted with the qualities of flax, asking their opinion of it, and the reply he received was, "If you can get any quantity of flax like what you sent us it will greatly diminish our orders for foreign supply, and we commission you to purchase and send us over any quantity of such flax you can procure, until we say 'stop.'" It was facts like this which led the Belfast merchants to test our soil; and so thoroughly convinced were they of the superiority of our soil and climate that they established the society, of which I am the representative, and with which the one you are about to establish in this town will be connected. When the parties who brought the superior samples to market, of which I have given an instance, were questioned relative to it, they, in general, could not give a satisfactory reply; but their usual answer was, "I made a hit," as they termed it; but it far more frequently happened that they made a "miss," and I know one gentleman, who is now present, who made a "miss" last year, but has succeeded and made a "hit" this present year. I will call upon this gentleman, in a short time, to give some information on this system. While, however, samples of the finest flax have been produced by chance, I wish it to be impressed upon the farmer that the same can be produced by design, and we have this as an earnest of what our soil and climate is capable of; and the only conclusion we can come to is, that

ignorance alone of the treatment and cultivation of the plant is the reason why the best qualities of flax are not met with in quantities in the Irish market. It is unnecessary to take up your time by pointing out the various errors in the present system of treating flax in Ireland, and to which our want of success and causes of failure are in so many instances to be attributed; and to enlarge on these reasons would take up more time than there is occasion for. I may state, that any party wishing to put questions in relation to this subject, I will either answer now, or afterwards furnish with answers; but every thing of importance in the proceedings of the society, or in connexion with the cultivation of flax, is contained in the papers I have brought with me, and every individual present will have an opportunity of obtaining the different copies. The want of a proper system of rotation of crops, and the ignorance of the agriculturist in not knowing the quality and condition of land fitted for its growth, are the main causes of failure in Ireland. A great fault in Irish flax is, that it is grown, in general, on potato ground, which is soil of too strong a nature; the great fault therefore in our flax is, that it is too coarse; and I may also notice that the ground is not deeply enough laboured for producing a good crop. The flax, like onion seed, throws out small fibres, which strike into the ground, perpendicularly, a depth equal to one-third of its own height. The ground should be well pulverised for the reception of the seed. All the clods should be broken, or otherwise the crop is lost, or does not come to a degree of perfection so high as it would, in other circumstances, but comes up in a straggling and disorderly manner. Another great drawback, which often prevents good flax crops, is, that it is frequently sown on land recently limed; this is a practice which cannot be too much condemned. It would be well for farmers who cultivate flax, if they would bear in mind that flax should never follow lime sooner than the third year. But the greatest drawback is, that the flax is made to follow in too frequent a rotation on the same soil. It has been reckoned that it is inexpedient and unprofitable to have flax sown in the same soil more than once in a seven years' rotation, while in some soils it would not be proper to have it sown more frequently than once in eight, nine, eleven, or thirteen years. This is the rotation adopted on the Continent, but here a contrary system prevails, and a much more frequent rotation is observed. Some farmers, when their flax crop succeeds well one year, say "We will put all our land under flax next year." This is an unwise plan, and would, instead of benefiting, entail much loss on the party pursuing it. The plan taken by the society to spread information upon the subject of growing flax, and to introduce a proper and profitable mode of preparation, was, in the first instance, that of sending over a number of young men to Belgium to acquire a knowledge of the system pursued there. Some of these had been twice, some thrice, in the lower Countries, and had returned perfectly qualified to communicate instruction to others, on the same subject. The society have also brought over several foreigners, who, under the direction of the association, have been going throughout the country, communicating instruction in the proper management of this plant. This mode of procedure necessarily entails considerable expense, both abroad and at home. The society is particularly anxious to impress upon farmers the advantages of holding flax over to the following year, stacking it up like grain, and scutching it in the good weather of spring or summer, when they have plenty of leisure. If this system is once established, and if the society will go on as it has done, for a year or two more, its object will be answered, because a proper system will then be fully known and appreciated throughout the country, and the various branch societies can carry out the object on their own account. I have already said that the climate of Ireland is admirably adapted for producing flax, and though there are various drawbacks, yet these arise chiefly from mismanagement on the part of those individuals who cultivate this plant, and is not to be attributed to any incapacity, either in the climate or soil of this country. The present season will fully justify this assertion and has furnished several confirmations of the fact. Abroad the principal

cause of the failure of the crop was the long drought which frequently succeeded the period of sowing in Spring, and which often lasted for six or eight weeks, and, in consequence, the seed often perished. In this country we have little fear of this, there being so much moisture in the soil, and there being frequent showers at the time when it is most required. Several farmers have followed the instructions of the society this season, and have derived much benefit from so doing; and, I must say, that not a few of the Irish agriculturists have followed the directions most minutely—preparing their land, for instance, by autumn and winter ploughings, and by frequent rolling and harrowing, and the gratifying result is, that their flax on foot is equal to the best produced upon the Continent. In these cases the crop staid in the ground as it does abroad, where it was so thick that it tapered to a considerable height. The flax, in these instances, resembles young trees in a plantation, where they are very thick; and it is a fact well worthy of notice, that this flax, to which I have been referring, bears often only one seed capsule, but never more than three. In pulling a handful, it is frequently found, that there are not more than two stalks, out of every twenty, that carry more than one seed. When flax stands thin, it grows coarse and branches out, and it is a well-known fact that the branches of the plant are of no value whatever as flax. I have much pleasure in stating that wherever the agriculturists in the employment of the society have been located during this or past years, they have given the greatest satisfaction, and the Belfast merchants and flax-buyers have pronounced the article treated by them much better handled than it has been in former years, under the old system; and I can only say, if the instructions of agriculturists and foreigners are extensively adopted, and faithfully carried out into active operation, in this country, it may become a better flax-producing country than any country abroad. With us, in autumn, from the broken nature of the weather, there is often great difficulty in getting our corn carried, and for this reason it is recommended that the flax should be stooked in the field, and held over until the following year. This is the Courtrai system, and that recommended by Mons. Demann as the best for this country. The plan was to dry the flax, then stook it in the field, and afterwards stack it like grain, and keep it in that state to the following May or June. The seed may be rippled off in winter at the leisure of the farmer, for it is very profitable, either for feeding cattle, or crushing. Flax is frequently held over in the manner I have described for three years, which much improves the quality, and a reasonable per centage is returned to the farmer for the capital invested. I once met with a farmer who, having missed his market for his flax the first year, had stacked it and held it over, and has it at present in stack for the third year, and I have no doubt but he will be well remunerated. The proper time for threshing out flax is the month of May or June, when the weather is generally good, and the grower has plenty of leisure. For foreign flax, but more especially for that prepared at Courtrai, our merchants are in the habit of paying from 150*l.* to 200*l.* per ton, and there is no reason why we may not have as good flax, and get as good a price, as the grower on the Continent. [Sir T. STAPLES.—What is the average price per ton of Irish flax? About from 30*l.* to 50*l.*; while that of foreign is very seldom less than 100*l.* and sometimes so high as 200*l.*] I have ascertained that last year, in Tandragee market, a sample of Irish flax, which had been treated according to the new system, brought 18*s.* 6*d.* per stone, which was at the rate of 140*l.* per ton, and this year even more will be realised. The society have brought over agriculturists from Hamme, Lokeren, &c. and under their instructions there is no doubt whatever that we can produce as good flax as any grown on the Continent, if we only follow out their system. Another part of the Courtrai system is to ripple the flax upon the field in a green state; they have proper tools prepared for the purpose of steeping it, and they tie it up, and proceed to the steeping part of the process. I will not do more than allude to the very neat system of pulling and tying up, which is practised by those who follow this plan. It is well worthy of attention; for it is not a small matter, whether or not a

good system of pulling and tying be adopted. After rippling it, they tie it up in their own peculiar manner, and commit it to the pool, which has been prepared for some weeks—which is, in fact, always prepared. If it happens to be adjacent to running water, the stream is, of course, turned into it and one end of the pool is closed up. As to the proper time of keeping flax in water no specific rule can be laid down, for it depends upon several circumstances, such as the heat of the weather, and the quality of the material. Every one must learn to judge, to some extent, at least, for himself—in this matter as well as in most others, a great deal depends on individual judgment. After steeping, the flax is brought out, and allowed to drain for an hour or so, and then spread on the grass. This must be done with great care and attention. It is turned with long poles, or wattles, which are run under it; and row after row is turned over, beginning with the first, and proceeding, so that the second falls upon the ground which the first has occupied; the object of this is that both sides may be equally bleached. Flax treated in this manner brings 1s. 6d. or 2s. more than that which has not received turning. Some farmers in the neighbourhood of Coleraine and Newtownlimavady treated their flax in the Continental method last year, and got from 1s. to 2s. more for it per stone than if they had adhered to the old system. From a want of proper attention to grassing and watering, Irish flax is generally streaky. The turning, on the Continent, is generally performed before rain: the good effect of this is obvious, as the rain serves to beat down the flax, and to give it a better hold of the ground; and if it be laid down thickly, it is not so likely to be tossed or blown away by the wind. As to grassing, that, as well as watering, was a process for which no precise rules could be laid down. If the flax had not been watered, it would require more grassing; while, if it had too much water, the less grassing it received the better. When grassed, the flax should be taken to the ground, and put up to dry in the field till ready for taking to the mill for the purpose of being scutched. One cause why flax is deteriorated in value, arises from a habit in Ireland of roasting it. I had this morning an opportunity, on my way from Aughnacloy to this place, of speaking with six or eight persons who were employed in the process of drying or roasting, and I endeavored to convince them, and left with them copies of these papers for the purpose, that they were greatly injuring the quality of the flax, and eventually putting out of their pockets three or four shillings per stone. This process undoubtedly exercises a most ruinous influence on the plant: it is this which dissipates the oily substance, and makes it so husky in working that the spinner places little value upon it. From this cause the Ballahay flax and other similar descriptions of hand-scutched flax always brings the lowest price in the market. There is no necessity for treating the plant in this injurious way. If a couple of handfuls were lifted up, and shook out till they would spread on each side of the operator, if lifted neatly up, and gently let down again, it would stand like a tent spread out to the wind, and one or two hours in this position would make it dry. In Ireland hand-scutching is, generally speaking, conducted on bad principles. It is a bad plan in paying for scutching to remunerate per stone and not per day, inasmuch as the scutcher, if he please, serves himself at the expence of those who employ him. He could work it off to a considerable extent in tow, much to the deterioration of the quality of the flax, and of course prejudicial to the interests of the owner. The society, whose secretary I am, being aware of this fact, have offered large premiums for improvements in machinery; and on the 1st November, it is hoped, we will be able to publish, for the benefit of the country, a statement of what we will be able to effect in this instance. The society have offered one hundred guineas for improvements in machinery. This premium was offered for improving the machinery at present in use, in such a manner as to make it applicable to, and available by, cottagers, as well as the rich man; and it is expected that it will be readily adopted for work, either by horse, hand, or water power, and if this matter succeed, there will be a great want in the improvement supplied. Above all the

means for encouraging the growth of flax in this country, the society are anxious to introduce the factor system. The farmer, however intelligent he may be, is liable to make mistakes, if he would attempt the whole management of his flax crop. In order to prevent these blunders, the factor system was established. In Courtrai the farmer has no care beyond growing his flax, for the factor purchases the crop on foot, paying a price in proportion to its appearance. If the society succeeds in establishing this plan in Ireland, and we have great hopes of succeeding, in a year or two nothing would remain for it to do, for its views would then be completely carried out. The factors are individuals or societies who expend their money in the grain crop. They visit the farms about the middle of June, and give value according to the appearance of the crop when the seed is being formed. From 10*l.* to 30*l.* is frequently given; and many who now do not realize any remuneration, might have 20*l.* without much trouble if they will attend to the necessary instructions. This system the society is more anxious to introduce into the country than any other, because there is much in it to interest the farmer, and to secure the manufacturer the best treatment of the plant. I lately met with a travelling agent of Messrs. Marshall, of Leeds, who sent that agent to Ireland, before going to make the usual purchases on the Continent; and he assured me that since his last visit to Ireland, which was six years ago, he had noticed a very striking improvement in the management of the crops, and in the general appearance of the markets; and added, that all which was wanting, was to procure factors, who would purchase from the farmers in order to insure a proper management of the plant. He also told me he would advise the English, Irish, and Scotch gentlemen, established as flax factors on the Continent, to return to their own countries, particularly to the North of Ireland, and engage in the occupation there. If this plan succeed in Ireland, you will have no more need of this society, or its object, because the Society will have achieved the great object of its existence, and the designs of its projectors will be answered. Mr. Skinner concluded by giving a statement of the demand for the article which was at present quite unknown to them. There is (said Mr. S.) every reason to believe that it will be a long series of years before this demand be supplied. It takes from our country an immense drain of capital—6,000,000*l.* annually is required to purchase foreign flax, to satisfy the demand. All this money might be circulated at home, inasmuch as if rightly managed this country could produce as much flax as would supply its manufacturers. There are some houses in Belfast at present consuming from ten to fifty tons weekly, while at Dundee and Arbroath there are mills requiring at the rate of a hundred tons per week; in proof of this I heard that lately, at Derry, 18,000 tons had had been freighted in one vessel alone for the Dundee market. I have great pleasure in being able to state that the French tariff has not produced upon our linen trade the extensive and injurious facts dreaded; they cannot establish a business to succeed with them; want of capital is one reason, and want of proper machinery another. With these cheering prospects it will appear obvious that a society calculated to do so much good should be supported, and if such should appear evident to the parties present, I hope they will lend the society such assistance as will enable them to continue operations for one or two years, which time will, I feel confident, fully establish the system recommended. Mr. Skinner resumed his seat amidst applause.

Society for the Improvement of the Growth and Preparation of Flax in Ireland.

This society has been instituted, under the most favourable auspices, by the flax spinning mill proprietors, and others connected with and interested in, our staple trade and manufacture in Belfast and the neighbourhood. It is intended to embrace all the landed proprietors and intelligent farmers

of the North, in the first instance, and, ultimately, throughout all Ireland, the object being of the greatest national importance, when it is taken into calculation the vast sums of money annually sent out of this kingdom for flax to countries where not one shilling's worth of our produce can be sold; and when it is well ascertained that our own soil and climate are equal, perhaps superior to any in the world for the growth and perfection of the plant, all that is wanted is the *same skill and care in the cultivation and preparation* that the people of the Continent bestow upon it, to enable us not only to supply our own manufactures, but to export largely to England and Scotland.

The following observations, as extracted from the Reports of the Deputation to Belgium, are recommended to the notice of flax-growers, with a view of inducing a more careful preparation of the land for the flax crop than hitherto practised, with other general instructions regarding the management of the crop through all its stages:—

SOIL AND ROTATION.

With attention and careful cultivation *Flax* may be grown upon any soil, but its quality will altogether depend on the *preparation* of the land for the crop, where a porous subsoil (such as Belgium and Holland naturally possess), cannot be met with, nor a dry, deep, rich and arable loam (such as the plant thrives best in) be had. Art and labour must supply the deficiency of nature, and thorough draining, trenching, and manuring must create a deep soil and enrich it. It is not, therefore, to the *immediate* preparation of the soil for the flax crops, that its abundance or good quality is to be chiefly ascribed or looked for, but to a *gradual system of amelioration*, which will bring the land into the high condition required for this plant. In Belgium and Holland every rotation begins or ends with flax, and under a judicious rotation, and a course of continual improvement of the soil, can alone the finest qualities of the flax be raised; for, let it be understood, that no sort or quantity of manure put into the land the time the flax is sown, can produce so large or so good a crop as will grow in land gradually and *properly prepared*. The flax crop abroad usually follows oats, sometimes wheat or barley, but potatoes scarce ever—and its rotation seldom comes round under the 7th year, and more often *later* than under it.

PREPARATION OF THE GROUND AND SOWING.

The course that must universally be adopted by our farmers to ensure flax of superior qualities, is, as in Belgium, to plough early in *autumn*, throwing the land into high ridges, thereby giving it the benefit of the action of the frost and air, and by good draining, (whether it be subsoil or surface) to keep it free of water throughout the winter; two light ploughings, with harrowings, to be given in spring to pulverise the soil, and kill the weeds; the first to be as early as possible, so as to admit of at least a month's interval, and the harrowing each time to be just before the ploughing, after which the drains to be carefully dressed up again. Following the last harrowing, it is necessary to roll, to give an even surface and consolidate the land, breaking this up again with a short toothed or seed harrow, ere sowing; (or the back of a harrow will do) and after sowing, covering it with the same, going twice over it, (or with a *bush harrow*,) and finishing with the roller and making clean the furrows. The seed should be sown very thick, about 160lbs. to the English acre, (as calculated from the Flemish measure.) This ensure the flax being finer, and prevents the plant branching out and from being ever-loaded with seed, which will never ripen equally, and will occasion coarse branchy tops to the plant: it should also be sown in ground rolled and prepared almost like an onion bed, for if the seed should be covered more than an inch it will not briard, and this fact occasions the frequent disappointment of a thick crop to the farmer, who had a right to expect one from the liberality with which he had given the seed. It

is not advisable to sow clover or grass seeds with the flax crops, but *the farmer will* do it *abroad* as well as at home, and what he may lose in the quality of the one, he has some compensation for, in the accommodation of the other. In some parts of Belgium, the preceding crops to the Flax has often a double quantity of manure given to it. Or more frequently when the land requires it, some very rotten dung is ploughed in with the stubble, and this becomes completely decomposed during the winter, the quantity of manure depending on the state of the soil as to fertility; but special care is taken that no *hot* dung is used for this crop, and nothing which, by any chance, can increase weeds. Liquid manure is, however, frequently given to land preparing for flax, and generally laid on the ground after the rolling before breaking up for the seed, it being an essential condition that, previous to sowing the flax seed, the land is quite clean and free of weeds—a thousand gallons of urine from drainings of the house, stable, byre, and dung heap, in which the emptying of the privy have been steeped, and often with the addition of from 600 to 1000lbs. rape cake mixed with it, is frequently given to the acre on which flax is grown—it is carried out in tubs on handbarrows, and ladled evenly over the land, or pumped into casks on carts, like the watering carts in our streets, and sprinkled heavily over the ground; if from a roller cart the better—from three to ten days is allowed for it to soak in, and then the breaking up to receive the seed, harrowing and rolling, as before; besides clover or grasses, carrots, parsnips, and turnips are often sown with the crop abroad, the soil being in a high state of cultivation for these roots; but *careful cultivators* allow of nothing to divide the juices of the soil with the plant. *When these roots are sown with the crop*, liquid manure is given after the pulling of the Flax and weeding of the ground, when they spring up astonishingly fast; it may be added, as not generally known, that the fine suckers and roots of good Flax will strike into the ground a depth equal to one-half the height of the plant, therefore the soil must be deep and well tilled to admit it, and ensure its thriving well.

WEEDING.

The next operation is to weed the flax as soon as it is a few inches high, and can readily be distinguished from the weeds—one great cause of the superiority of the foreign flax arises from the pains taken to weed it—the crop is sure to pay for all the expense incurred. This is done abroad by women and children, who with coarse cloths round their knees, creep along on all fours, this injures the young plant less than walking over it, they work also facing the wind so that the plants laid flat by their pressure on them, may be blown up again, or thus be assisted to regain the upright position. This fact proves among many what minute attention is paid to every circumstance which can possibly affect the crop—the tender plant pressed one way soon recovers, but twisted, swirled, or flattened in different ways it seldom does.

PULLING AND RIFFLING.

To judge of the time of pulling, the best criterion is, when about two thirds of the stalk is observed to turn yellow, and to lose its leaves; but the fibre is in the best state before the seed is quite ripe, and if this alone should be the object of the farmer, the flax should be pulled without waiting for the seed to fully ripen, but then the seed is valuable for the oil it contains, or for feeding, and forms an important object in the value of the crops as it will produce from £4 to £7 per acre, Irish. These advantages are to be balanced and determined on by the grower himself, and some judgment is required to ascertain the *exact time*, when the greatest value from the crop may be secured—for there is great variety of opinion on this point; in Belgium the early pulling is reckoned to yield the finer flax, while in Holland, they think that though it may appear finer, it is weaker

and greatly deficient in weight from the scutchers and the hackles; when any of the crop is lying, it should be pulled as soon as possible and kept by itself, as should the long, middling and short, and tied up separately. This is particularly attended to on the Continent, and must be a great means of enhancing the value to the spinner, and consequently the grower, who will be amply *paid* for the extra trouble: when the Flax is pulled, it is laid on the ground in handfuls heaped in small parcels, each handful crossing its fellow, and left to dry for a day or two, and then tied up in small sheafs or bundles (that would about fill both hands) carried off the field for rippling, or done on it, and then taken away to the steeping pools. But the Courtrai system of stooking the flax as soon as pulled, without binding it, is well adapted to this country, with the handfuls set up and resting against the other, the root ends spread out and tops joining like the letter A, forming stooks of about eight feet long, and a short strap keeping the ends firm, in this way it will resist rain and wind well, and dry fast; in eight or ten days it may be bound up in small bundles, and carried to ripple and steep; or it may be stacked in the field, or put into a barn, the seed to be taken off at leisure in winter, the flax to be steeped the following May—a system strongly to be recommended for this country, where the convenience of parties will admit of it—as for steeping and grassing the best season of the year is ensured, and it is a time of comparative leisure, when attention is not called off to the harvesting of other important crops. The flax is said also greatly to improve by keeping over even for *two or four* years.

WATERING.

This should be done in soft water, and to ensure this let the steep holes be filled some weeks before required, that the sun and air may soften and warm it—they should be dug from six to twelve feet wide, by about twice the width for the length, or may be of any required length, and to be filled from running water if possible, and after the flax is put in, to carefully exclude any addition, except in case of leakage, and then to add most cautiously. Buggy water, or any tainted with minerals must be avoided; and to guard against the risk of such getting into the ponds, when suspected to be in the soil, it would be well to cut a drain round the pool, and thus carry it off from entering it. On the Continent the same pools are used year after year, and usually are planted round with the alder, whose leaves falling into it, are said to improve the colour of the flax, to kill insects that would injure it, and to soften the water; but others, again, give no faith to these notions; the holes are generally four feet deep at least, and the bundles of flax are laid in nearly upright, the root ends downwards, in rows the width of the pool, each row inclining against the other, and every second or third tier as laid are covered with mud from the bottom, or straw and boards, or thin sods or scraws, with stones would do in this country where they can be had, taking care that all is well covered and kept below the surface of the water. The men placing the flax are thus engaged standing up to their loins for a whole day, carefully arranging the bundles as handed to them. The steeping will take from ten days to twenty, according to the time of the year, heat of the weather, and the nature of the water, and somewhat on the ripeness, greenness, or dryness of the flax. But every grower should learn to know when the flax has had enough of the water, as a few hours too much may ruin it; and on the Continent they watch it closely as the time draws near, looking at it every two or three hours, and when they find that breaking the straw in the middle, that the fibre will draw free of the shove from each end, it is ready to lift; the bundles are then placed on their ends for a day packed close together to drain, ere loosed to spread on the grass, and if the weather should happen to be bad, left some time longer in this way, for much wet at this stage would injure it much.

GRASSING.

This operation is of much more importance than generally supposed. The flax should be spread upon short pasture, thicker than usual, keeping the rows very even, for the sake of turning it readily, which should be done every second or third day, to ensure a uniform colour, free from streaks, which Irish flax always has from bleaching on one side only; and thus on this one account (as well as many others) is of lower value than the foreign. It is turned without cost of much of either time or trouble, by a long rod being slipped under it, and may require from ten days to thirty or more, if it has not had steeping enough, (immediately after rain is the *best time* to turn it.) It must be lifted on a dry day, tied up again in small bundles, and if not taken soon to the mill or handscutched, will be much improved by being put up in small stacks loosely built, with stones or brambles in the bottom to keep it dry and help to let the air circulate through it. To guard against wind lifting it in this state, the most sheltered spots should be chosen for grassing until it is fit to tie up.

MILLING AND HAND-SCUTCHING.

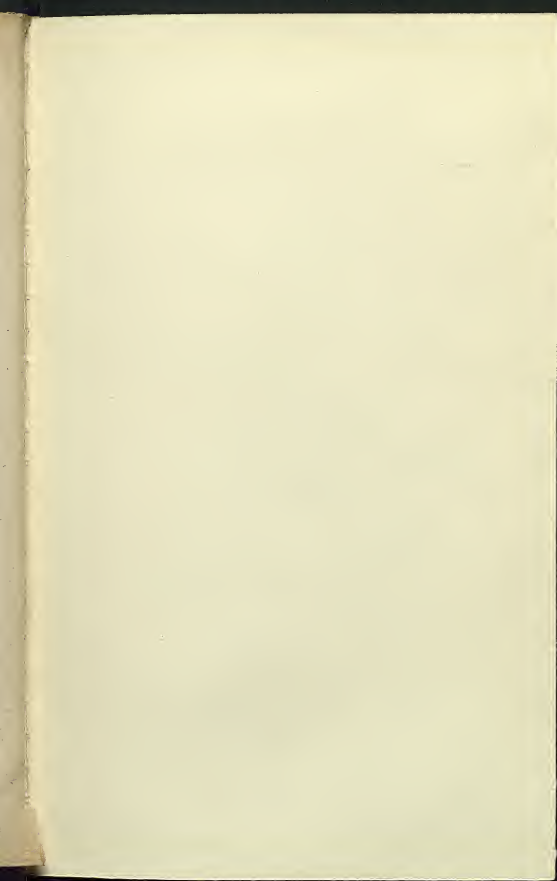
In the scutching and dressing of flax we are far behind the people of the Continent; and we would solicit all classes of friends to the linen trade in this country, the scientific, mechanical, and intelligent—to take the subject into their consideration. That our present machinery is defective, all admit; and by our country system of hand-scutching, flax is turned out so badly, that it rates even lower in the market than the first. One cause of this, undoubtedly, is the farmer drying the flax on turf fires, and small temporary kilns, formed of sods and wattles, where it is liable to be scorched and browned, so as not only to discolour the flax, but also to make it hard and *haskey* from the hackle, brittle, and difficult to bleach. But the main cause that we do not equal our continental neighbours in this process, is the want of *that due attention and careful management* so conspicuous in every stage of their proceeding. They tie up their flax very neatly; and begin with keeping the ends even, and from first to last never taking it out of the order it grew in, never mixing heads and tail-ends, and short and long, bad and good, together. In Holland and Belgium, they generally, if not universally, hand-scutch their flax; and some *Irish flax*, prepared by the Dutch, was found *superior* to any grown in Holland; and Mr. Demann, the Belgian agriculturalist, states, that he thinks some of what has been submitted to him to superintend the hand-scutching of, will be worth, when ready for the market, 140*l.* per ton. What he and the Belgian labourer have handled already, whether in the mill or by hand-dressing, has been pronounced by the spinners and judges worth 2*s.* to 3*s.* a-stone, at least, more than what had been cleaned under the old negligent process. But this is not all. By experiments on a small scale, the produce of clean flax from the straw, under the Belgian's management, was about *one-fifth* of the weight, besides tow of three qualities, the first of some value; whereas the produce of an equal quantity of straw sent to the mill and scutched the usual way, was but *one-seventh* of the whole, and but one species of tow sent home, of a very inferior quality. Some experiments are, however, making by the society on a large scale, which will be published to this country. In the meanwhile, by offering a large premium to millowners and mechanics, they hope to have great improvements in mill machinery effected ere next year; and to the country farmer, who has scutched at home, they would encourage him to try the effect of a more careful system of handling and dressing, keeping the straw and fibre even, breaking or crigging the shove or woody part better, and drying in the open air, or hanging up a sheaf or two in their houses a day or so before labouring at it, or let them take any means excepting the kiln-roasting it, by which it has hitherto been so injured.

Great waste is occasioned in the mill, (and loss of time and material in hand-scutching as well), when the flax comes damp from the grass, as it too generally does late in the season, or when it has not been sufficiently steeped. To remedy this evil, the practice is to add more power to the scutchers, and consequently more loss ensues to the owner, whereas attention to the state of the flax, ere sent to the mill should be the remedy. But to assist the farmers in wet seasons, drying houses might be constructed in the different flax districts, where large quantities might be dried by heated air or steam pipes: the common corn kilns throughout the country might dry a little at a time, when not otherwise employed, but their compass is too contracted to answer a general purpose. Owners of spinning mills, or wherever steam engines are used, might find such appendages to their works profitable. In the mills much more care must be taken in the rolling. It would require to pass through different sets of rollers of varied dimensions of groove, so that the shove or woody part will be minutely broken, which will occasion it to be more easily scutched, and less liable to be *slaved* or wasted, as it is the long unbroken shoves that tear away the flax; scutchers *thus* might be lighter than those in use. In hand-dressing, the same directions apply: if well beaten, the cleaning is easy, and yield more abundant. The Belgians use also a scraper and a comb, which greatly contribute to the nice order they turn it out in, and which please our spinners so much; for several of these gentlemen declare the using Irish flax is so much wear and tear, and loss, that they would rather pay two prices for foreign than use it, and some, on these grounds, never use it *at all*. But it is hoped that defects so injurious to all parties, and to the country at large, will be remedied; and by care, attention, and the means now taking by the society to remove them, may be shortly effected.

SAVING THE SEED.

It is hoped that the value of the seed now being made known, that henceforth *all* will ripple it. The flax is easier handled in the water, and in spreading, after being rippled; and the bows, whether green or ripe, may be kiln-dried, and husk and seed together ground into meal for cattle feeding, no other substance known being better for milk, butter, or fattening;—but observe how vermin thrive on it, for even after it has been steeped, rats will prefer it to corn. To the crushed for oil, a little kiln-drying will not hurt it; but if for sowing, the crop should be allowed to ripen, or nearly so, dried for a few days in small handfulls laid across, or in small sheaves broad stap; and a good way is to build them up in a stack, with alternate layers of dry straw, to thrash out in spring, always preserving even the *chaff* for the cattle, as it contains much nourishment; of course, in this case, the steeping had best be kept over until the spring.

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